

FISKE FUND PRIZE ESSAY.

ART. XI.—*On the Effects of the Use of Alcoholic Liquors in Tubercular Disease, or in Constitutions predisposed to such Disease.* By JOHN BELL, M. D., of New York. The Dissertation to which the Fiske Fund Prize was awarded, June 1, 1859.¹ (Published by request of the Rhode Island Medical Society.)

IN writing upon the subject proposed for an essay, I have thought it advisable to restrict slightly its extent. I have had more especially in view the influence of the use of alcohol upon that form of tubercular disease which develops itself in the lungs. Pathologists unite in considering tubercle to be the same substance, wherever it makes its appearance, and, for this reason, in a philosophical treatise upon pathology, the various forms of disease which have their origin in this dyscrasy, should be considered in connection. But the effects of tubercle are so various in different organs that the treatment must necessarily be somewhat different; indeed, they can hardly be considered together with respect to any single remedy. I am not aware that alcohol has ever been recommended as a therapeutic or prophylactic agent in the tubercular hydrocephalus of children, neither has it in tubercular disease of the external lymphatic glands, or those of the mesentery. There are no statistics extant to show the effects of alcohol in those predisposed to these diseases, for they are almost peculiar to that time of life when alcohol is not used as a beverage; and one would hardly feel justified in *experimenting* on such patients with such a weapon. It is for these reasons that I have confined myself to somewhat narrower limits than the subject implies.

Phthisis is by far the most frequent form of tubercular disease, and is much more fatal than all others united. It is also in this form that alcohol has been especially recommended. From these considerations, I think it will appear that this curtailment of the subject will rather increase the value of the essay, inasmuch as the conclusions can be arrived at with greater certainty. In the application of statistics to medicine one of the first requi-

¹ The Trustees of the Fiske Fund, at the annual meeting of the Rhode Island Medical Society, held in Providence, June 1, 1859, announced that the premium of two hundred dollars offered by them in 1858, for the best dissertation on the following subject: "*The Effect of the Use of Alcoholic Liquors in Tubercular Disease, or in Constitutions predisposed to such Disease, to be shown, as far as possible, by Statistics,*" had been awarded to the author of the dissertation bearing the motto—

"Occasio præceps, experientia fallax, judicium difficile."

And upon breaking the seal of the accompanying packet, they learned that the successful competitor was John Bell, M. D., of New York.

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sites for accuracy is to dissect out the subject from all its connections, and present it clear and single to the view.

It is undeniable, that within a few years there has been a growing opinion that the use of alcoholic liquors is advantageous in the case of persons predisposed to phthisis, and even in those already the subjects of tubercular deposition in the lungs. And this has been the case not only with the public at large, whose appetites or pecuniary interests have had more to do with the formation of the opinion than proof of any form or degree, but also with medical men, ever ready to seize upon anything which may prove of advantage in so common and destructive a malady.

But the history of the therapeutics of consumption warns us that a favourable estimate of a remedy may gain general consent upon very slender grounds. The fate of tartar emetic, digitalis, iodine, and cod-liver oil (to a certain extent), each at one time believed to be almost a specific, ought to warn us to make a most careful and impartial estimate before acceding to an opinion which time may prove to have been too hastily adopted. To determine the truth or falsity of this opinion is the object of this essay, and it is intended, in accordance with the proposed terms of the subject, that it shall be done entirely by statistics. However strong objections may be brought against this mode of reasoning in medicine, if judiciously employed, every one feels the force of it. It would have been easy to gather the opinions of authors, or even to have ventured in person upon the fascinating ground of theory. But this method would have been as little satisfactory to the writer as convincing to the reader. The accumulation of statistics, however, is not an easy task. Favourable opportunities for a series of accurate observations are rare, and the power of taking advantage of them limited, unless, like the distinguished originator of the numerical method, one's whole time is devoted to this single object. But there are several causes which I have found to render the collection of statistics upon this subject especially difficult. The causes which are believed to be active in the production of tuberculosis are so numerous that it is absolutely impossible to disentangle a single one and determine its effects with certainty. Again, the moral stigma attaching to the use of alcohol renders it extremely difficult to determine the degree to which it is used. And, in exhibiting it as a medicine, patients are too apt to think it falls to them to regulate the quantity and frequency of the dose.

To determine a question of such intricacy, with any approximation to certainty, would require a long time and a multitude of labourers. Such a determination, however, it is the duty of the profession to arrive at as speedily as possible, not only on account of the importance of the question itself, but on account of its connection with morals. It is hoped that the statistics here presented may assist in the solution.

I have endeavoured to present all the facts attainable which bear upon the subject directly or indirectly; first giving the pure results, and afterwards presenting those points—impossible to be reduced to a numerical form—which it is thought may increase or diminish the confidence with which we should regard them. If any of these facts should seem to be too remotely connected with the subject, the excuse for presenting them is a desire to bring into one view everything which may assist in the solution of so difficult a question. It is perhaps not improper to state that the question has been approached without a bias to either side. It would have been easy, by a selection of such statistics as favour one view and the exclusion of all others, to arrive at the truth of a preconceived hypothesis with the

appearance of conclusive certainty. That this certainty does not appear to be arrived at will, perhaps, be considered sufficient proof of the impartiality and good faith with which the following facts have been collected and presented.

Before bringing forward those statistics which bear upon the solution of the question itself, it may not be unprofitable to glance at what has already been written upon the subject, and has been instrumental in giving that direction to public opinion in the profession which undoubtedly exists. After a careful examination of the literature of the subject, it is difficult to imagine how so wide-spread a belief could have arisen from so few recorded facts. In most of the monographs upon phthisis, allusion is made to the use of alcohol as a therapeutic agent; but it is generally only recommended in the later stages of the disease, when the strength is failing, and without intimating that it is thought to possess any especial curative power, further than to prolong the struggle for a time. Even here no facts are presented in support of the opinion, which must consequently be taken as a mere theory.

After a careful examination of all the leading medical journals of this country and the foreign ones which circulate here, I am able to present only the following instances where anything has been said of sufficient importance to be likely to give a direction to the sentiment of the profession: In the *New England Quarterly Journal of Medicine and Surgery* for 1843, Dr. Jackson has given the results of the autopsies of 35 persons who were known to have been intemperate; in these, tubercles were found in the lungs in five cases. He infers, therefore, that the use of alcohol is advantageous, so far as liability to phthisis is concerned. In the *New York Journ. of Med. and Surg.* for 1844, Dr. Peters has given the results of about 70 autopsies of persons of similar habits: from the appearance of the lungs he draws the same conclusions, as to the effects of alcohol, as Dr. Jackson does. In both these papers, these inferences are only incidental to the main subject.

In the *Nashville Journal of Medicine and Surgery* for 1856 is an essay by Dr. Washington, in which the author theorizes that phthisis has its origin in deficient respiratory action, and that the use of alcohol will overcome the defect by causing a more rapid breathing. In the *Buffalo Medical and Surgical Journal* of the same year is a short essay in which the writer gives his opinion in favour of the use of alcohol in phthisis. One or two cases are also related in which recovery from that disease occurred under its use. Various other agents, however, were used together with the alcohol.

Two theories as to the causes of the deposition of tubercle in the lungs, from each of which the utility of alcohol as a therapeutic agent has been inferred, have been extensively circulated in the medical journals. The first of these is a chemical one. It supposes that the tissues of the body, and particularly of the lungs, are too rapidly oxidized, and accordingly that alcohol, like cod-liver oil, might supply the fuel for this abnormal combustion, and thus prevent a continual waste, if not supply material itself. The other theory is a mechanical one, and attributes the origin of tubercle to a deficient circulation of the blood, and a consequent retrograde metamorphosis of the tissues. In this hypothesis, too, alcohol is the remedy, by increasing the action of the heart. These theories I shall not notice further; and they are only mentioned here because I regard them as having assisted in giving currency to the prevailing opinion. Besides these instances, where something like argument is adduced in favour of the opinion, there are numerous other instances where the belief is avowed without any attempt being made to support it.

It will be observed that very little positive proof has been offered to the public as yet on the question; and it seems to me that other reasons have combined to give the direction to popular opinion which seems to exist. The following, I believe, are two of those reasons: The first, that the intemperate are very frequently of an originally robust form and vigorous health, and have a plethoric, *anti-consumptive* look. This will be spoken of more at large in another place. The second: the advertisements of liquor dealers, scattered broadcast, have probably, like a continual dropping, effected, in some degree, their object. To such an extent has this been carried, in some parts of the country, that whiskey may be classed among the quack medicines with almost as much propriety as any of the popular nostrums of the day. So far as I am able to learn, these few notices in the public journals, and one or two other reasons, have furnished the only basis for a belief in the antagonism of alcohol and phthisis.

The facts which I have been able to adduce in connection with the question may be arranged, for the sake of convenience, in two series:—

1st. Those bearing upon the question of the prophylactic power of alcohol.

2d. Those relating to its effects upon the system when tubercle is already deposited in the lungs.

And under the first of these divisions:—

a. The number of deaths from phthisis, and the degrees of intemperance in different places, with the connection between them.

b. The frequency of phthisis at different times in the same place, and its connection with the greater or less use of alcohol.

c. The comparative frequency of phthisis in the sexes, and how it is influenced by the use of alcohol.

d. The frequency of phthisis among persons pursuing different occupations, and the degrees to which they are addicted to the use of alcohol.

e. The frequency of phthisis among individuals known to have been in the habit of using alcohol, and among the temperate.

f. The age at which phthisis occurs in the temperate and intemperate.¹

g. The duration of the disease in the two classes.

The most accurate mode of deciding as to the relative degrees of intemperance, in different places, I believe to be the number of deaths resulting from that cause. Still, however, this is liable to lead us into error somewhat, as it is influenced largely by the habits of the place, and the kind of liquor most employed. In want of a better criterion, I have accordingly chosen it as sufficiently accurate to show on a large scale the truth or falsity of the prevailing opinion that those who make an habitual use of alcohol are decidedly less likely to be attacked by phthisis than the temperate. I do not claim more than a strong probability for the truth of indications arrived at by so uncertain a test.

The mortuary statistics of England are worthy of great reliance from their accuracy; and I have accordingly drawn largely on them. The following figures, drawn from the reports of the registrar-general of that country, are deserving of consideration. They exhibit the number of deaths

¹ The term "intemperate" is used very differently by different persons, according to their various estimates of the influence of alcohol, both physical and moral. Without intending to offer an opinion on this point, it will be used in this essay, for convenience, as applicable to those who make an habitual use of alcoholic liquors of any kind as a beverage. Those who often pass several days in succession without the use of them would be classed among the temperate, even if they occasionally used them to excess.

from phthisis and from intemperance, per million of inhabitants, for each of the eleven districts into which England and Wales are divided. The table gives the average for seven years from 1848.

Districts. No. 1 . . .	DEATHS FROM		Districts. No. 7 . . .	DEATHS FROM	
	Phthisis.	Intemp.		Phthisis.	Intemp.
1 . . .	3019	116	7 . . .	2730	30
" 2 . . .	2677	40	" 8 . . .	3398	63
" 3 . . .	2602	36	" 9 . . .	2778	45
" 4 . . .	3050	26	" 10 . . .	2447	49
" 5 . . .	2706	26	" 11 . . .	3236	24
" 6 . . .	2618	33			

Here there seems to be no very strongly marked connection between the number of deaths from phthisis and from intemperance. The 8th district, with a high average of deaths from intemperance, stands high in the list as to phthisis; while the 11th, lowest in point of intemperance, is also high in respect to phthisis. Of the 6th and 10th, both low in phthisis, one is low and the other high in intemperance.

It is obvious that, in consideration of the many other causes acting one way or the other upon the production of phthisis, we can draw no conclusion as to the actual effect of intemperance. And yet the figures are not without value, for we may, with considerable certainty, conclude from them that the use of alcohol has not that decided effect in preventing phthisis that many believe it to possess; if it had, we should see its influence in some approach at least to a regular series. It is plain that its effects, whatever they are, are so slight as not to appear in the multiplicity of other causes. It should be borne in mind that a considerable portion of the inhabitants of each district use alcohol; but the proportion is probably represented by the number of deaths from intemperance with an approximation to accuracy.

If four of these districts, where the deaths from intemperance are greater than the average, be compared with the others where they are less numerous, we shall have, per million of inhabitants,

						DEATHS FROM	
						Phthisis.	Intemp.
In 4 Districts	.	.	.	.	.	2910	68
" 7 "	.	.	.	.	.	2803	31

This would seem to indicate that the use of alcohol favors the production of phthisis. But the cities of London, Liverpool, and Manchester are included in the first class. In these, the deaths from phthisis are high. It is difficult to determine the result with accuracy for this reason. This comparison, however, goes to substantiate the statement made above, viz., that the effects of the use of alcohol cannot be very marked, either in preventing or causing the disease. Thus far, they show the popular opinion to be erroneous.

The following table shows the comparative annual average of deaths from phthisis and intemperance for each hundred thousand inhabitants in Boston for ten years, from 1835; in New York and Baltimore for the same time, and Philadelphia from 1830.

	DEATHS FROM			DEATHS FROM	
	Phthisis.	Intemp.		Phthisis.	Intemp.
Boston . . .	291	35	Philadelphia . . .	356	55
New York . . .	455	33	Baltimore . . .	411	29

In the comparison of these cities, we have a more favourable opportunity for arriving at the truth than in the previous table, as the population of them all is engaged in the same occupations, and has essentially the same

habits and modes of life. Yet here also, as far as we can perceive, the number of deaths from phthisis seems to have little or no connection with the degree to which the use of alcohol has been carried. At any rate, it is so slight as to be lost in the other causes of that disease. It would not be difficult to point out some of the causes which go to make the great difference in number in the deaths from phthisis in these cities. But the influence of alcohol could never be arrived at in such a way with certainty; and, as the table stands, it is sufficient to show the fact for which it was introduced, viz., that the use of alcohol has not a very marked effect, either in producing or preventing tubercular disease of the lungs. It would be easy to introduce an abundance of other facts to substantiate the conclusions already arrived at; but this can be done at the same time that we endeavour to determine what that slight influence may be.

b. In examining the number of deaths from phthisis and intemperance in the same place, at different times, we are freed from many of the causes of uncertainty inherent in those already given. In comparing the mortality of the same place, at different times, it is done under the favourable influence of the same climate, and the same habits and occupations of the citizens to a great extent. This method accordingly deserves a more attentive examination than the last; and we may expect more definite results. In the whole of England and Wales, the following table exhibits the mortality for a series of years.

DEATHS FROM				DEATHS FROM				
Phthisis. ¹ Intemp.				Phthisis. ¹ Intemp.				
1838	.	.	59,000	343	1849	.	50,000	817
1839	.	.	59,000	424	1850	.	46,000	863
1840	.	.	59,000	424	1851	.	49,000	842
1841	.	.	59,000	448	1852	.	50,000	795
1842	.	.	59,000	405	1853	.	54,000	882
1848	.	.	51,000	797	1854	.	51,000	869

Here we have a marked increase in the number of deaths from intemperance, much greater than the increase of the population, during the period, will account for. That the number of deaths from this cause is a fair criterion by which to judge of the degree to which a population is addicted to the use of alcohol, is substantiated by the fact that during the same period the importation and manufacture of alcoholic liquors increased much more rapidly than the population during the same period (Chadwick, "Rep. of Poor-Law Commissioners"). Yet, during this period, there was an actual decrease in the number of deaths from phthisis, notwithstanding the large increase of population. This would be a strong argument for the prophylactic effects of alcohol, were it not for the fact that both the increase in the deaths from intemperance, and the diminution of those from phthisis, took place during the period from 1842 to 1848, when the causes of death are not reported. This fact renders it highly probable that it was owing to the change in nomenclature which took place during that period. During the last seven years, when the returns were much more accurate than previously, there was a slight diminution of the number of deaths, taking into account the increase of population, and at the same time a greater diminution in the deaths from phthisis. The general hygienic condition of the people had improved, and their wages increased during the period.

On the whole, I think that the only deduction which can be with propriety drawn from this table is that which has already been made, viz., that alcohol is not an active agent, either in preventing or producing phthisis.

¹ In round numbers.

The following table is similar to the last, exhibiting the mortality from phthisis and intemperance in London for the quarters ending with March of the following years :—

		DEATHS FROM				DEATHS FROM	
		Phthisis.	Intemp.			Phthisis.	Intemp.
1840	. . .	1910	19	1848	. . .	1630	56
1841	. . .	1838	19	1849	. . .	1626	62
1842	. . .	1781	21	1850	. . .	1792	39
1843	. . .	1787	31	1851	. . .	1811	53
1844	. . .	1904	30	1852	. . .	1872	48
1845	. . .	1972	39	1853	. . .	1823	64
1846	. . .	1571	51	1854	. . .	1869	63
1847	. . .	1873	59				

Here we have a marked increase in the number of deaths from intemperance up to the year 1847, after which period they remain nearly stationary. During the first of these periods, the deaths from phthisis rapidly diminished in number; and they also diminished, but in a less degree during the latter (allowance being made for the increase of population). This latter fact shows that during the whole period there was some cause not connected with the use of alcohol which was gradually reducing the mortality from phthisis. After eliminating this cause, whatever it may have been, I believe these figures, as they stand, are an argument in favour of the opinion that the intemperate are less liable to phthisis than others. They only need the corroboration which the same result in other places would give to become a very powerful one. Let us see whether they are so strengthened by a comparison with other places.

While in England there has been an increase in the use of alcoholic liquors, in this country, under the influence of the temperance reformation commencing about 1837 or 1838, there has been as marked a diminution, at least for a time. If the inference drawn from the statistics of London is correct, we should have an increase of phthisis in this country.

In Boston, from 1830¹ to 1840, 15.30 per cent. of the deaths were from phthisis; from 1840 to 1845, 15.13 per cent. were from the same disease. In the last of these periods, the annual number of deaths from intemperance had diminished more than one-half from what it was in the previous period (census of Boston, 1845). Here, with a marked diminution in intemperance, there is a slight diminution in the proportion of phthisis. This result at the same time goes to invalidate the correctness of the deduction from the statistics of London, while it corroborates the opinion already expressed as to the slight influence, either way, that should be attributed to the use of alcohol. The following table exhibits the number of deaths from phthisis and intemperance in New York for sixteen years. The table supposes the population of the city to be one hundred thousand each year.

		DEATHS FROM				DEATHS FROM	
		Phthisis.	Intemp.			Phthisis.	Intemp.
1835	. . .	530	36	1843	. . .	432	22
1836	. . .	549	27	1844	. . .	396	31
1837	. . .	513	45	1845	. . .	447	30
1838	. . .	418	38	1846	. . .	425	32
1839	. . .	436	39	1847	. . .	452	56
1840	. . .	415	32	1848	. . .	411	38
1841	. . .	454	35	1849	. . .	451	43
1842	. . .	398	25	1850	. . .	373	23

¹ I do not consider the returns of death from phthisis made before this period as sufficiently accurate to be depended upon.

Here there is no sufficiently regular increase or decrease of intemperance to make the table of much value.

The following comparison, though perhaps not of great value, will show which way the figures point. The average of deaths from intemperance is 35. In the years when it was less than this, the average number of deaths from phthisis was 429. In the years when it was greater, the number was 459. If this table is allowed to possess any value, it goes to show that the use of alcohol predisposes to phthisis.

In Philadelphia, during the period from 1830 to 1840, the deaths from phthisis and intemperance were as follows, per hundred thousand inhabitants, each year:—

		DEATHS FROM Phthisis. Intemp.				DEATHS FROM Phthisis. Intemp.	
1831		385	78	1836		376	58
1832		380	87	1837		361	43
1833		351	76	1838		340	46
1834		335	62	1839		322	31
1835		356	40	1840		344	32

Here there is a sufficiently regular decrease of deaths from intemperance to make it obvious that it is not the result of chance. That this diminution was really accompanied by a corresponding diminution of intemperance is affirmed by Dr. Emerson (*Am. Journ. Med. Sci.*). In connection with the diminution in number of deaths from intemperance is a marked decrease in those occurring from phthisis. The series is sufficiently regular to allow us to draw the inference that they stand to each other in the relation of cause and effect, if we find the conclusion corroborated by other circumstances. There is certainly no other cause to which this result can be attributed, as, in other respects, the habits of the citizens underwent no change of sufficient importance to account for it.

The following table exhibits the same facts for the city of Baltimore from 1835 to 1845:—

		DEATHS FROM Phthisis. Intemp.				DEATHS FROM Phthisis. Intemp.	
1836		338	54	1846		332	16
1837		417	37	1847		444	12
1838		422	48	1848		443	17
1839		401	30	1849		423	24
1840		351	35	1850		344	18
1841		432	28	1851		379	20
1842		444	87	1852		383	22
1843		431	14	1853		446	17
1844		440	10	1854		438	14
1845		432	20				

During the first five years, there is a decided diminution in the number of deaths from intemperance; afterwards, they are about stationary. The deaths from phthisis are nearly the same throughout. The first five years, which were much more intemperate than the last five, have about the same ratio of deaths from phthisis. On the whole, perhaps, this table favours, in a slight degree, an opposite conclusion to that drawn from the last.

For convenience of registration, the city of London is divided into thirty districts; and each of these includes one or more sub-districts. In the year 1841, each of the registrars of these sub-districts had a series of questions laid before him as to the sanitary condition of his sub-district. One of these questions was as to the character of the population in respect to temperance. I have endeavoured to take advantage of their replies to

assist in determining the question we are discussing. In some districts, the replies were indefinite; and I have consequently rejected them. The following table gives the annual deaths from phthisis per hundred inhabitants in each district where the replies to the above question were definite:—

	Temp.	Intemp.		Temp.	Intemp.
Kensington . . .		.363	Whitechapel . . .	.452	
Westminster . . .		.384	Stepney . . .		.373
Marylebone . . .		.336	St. Olave . . .		.594
Paneras . . .	.323		Bermondsey . . .		.427
Islington . . .	.307		Newington . . .		.386
Hackney . . .	.306		Lambeth . . .	.341	
Strand . . .	.389		Camberwell . . .	.304	
City of London . . .	.355		Rotherhithe . . .		.462
Shoreditch . . .	.304		Greenwich . . .	.482	
Bethnal Green . . .		.230			
			Average,	.356	.395

The character of the population, its density and favourableness of locality, are pretty equally distributed, and could have had no great influence in causing this result. The general hygienic condition of the population of each of these sections can be judged of with considerable accuracy by the prevalence of typhus fever. The deaths from this disease in the temperate districts were at the same time .098 per cent. of the population; in the intemperate districts, only .083 per cent. Showing that, with the exception of this one habit, the latter class were more favourably situated as to health. And yet, in spite of this fact, the deaths from phthisis were most numerous in the intemperate districts. It is difficult not to believe that this preponderance was due, in part at least, to indulgence in the use of alcohol.

It is obvious that all these tables contain numerous chances for errors; and the dependence that is to be placed on them is only as indicating, in a very general way, the effects of alcohol. They are only introduced for the purpose of showing that the use of alcohol cannot have that very active prophylactic influence that is often attributed to it, so active that few persons who are in the habit of using it ever fall victims to consumption. That this opinion, in its full extent, is an error, the tables already given fully show.

c. Some important inductions can be drawn from a comparison of the two sexes, the degree to which they are addicted to the use of intoxicating liquors, and the proportion of deaths from phthisis among them. It will be gainsaid by no one that men are much more addicted to the use of these agents than women. In England, in 1848, 662 men and 135 women died of intemperance. The same ratio probably obtains in this country. During the same year, the deaths from phthisis were

Males	24,435
Females	27,227

The proportion of deaths among the females would be diminished considerably, if allowance were made for their composing more than half the population. Still, however, the popular opinion that females are more liable to the disease than males is true. The figures show, then, that the males are more addicted to intemperance, and least prone to phthisis. But do these facts stand in the relation of cause and effect? I believe most decidedly that they do not, but, on the contrary, that this preponderance of deaths from tubercular consumption can be shown to depend upon other

causes, and that, when these causes are eliminated, the greater intemperance of the males will be found to be accompanied by a greater liability to tubercular deposit, and that, too, especially in that time of life when there is the most marked difference between the sexes in proneness to the free use of alcohol.

Females are almost universally placed under worse hygienic influences than males. The in-door life they lead, their more sedentary occupations, the more vitiated air they breathe, their bad fashion of dress, and the smaller wages they receive, might well reverse the proportions of phthisis in the sexes if it were possible to express them in a numerical form. If, then, it can be shown that a single cause not enumerated above is more than sufficient to account for the excess of phthisis among the females, it seems to the writer a fair conclusion that the greater proclivity of the males to the use of alcoholic liquors is more than enough to counterbalance the anti-hygienic influence of all the causes indicated above, so far as the production of tuberculosis is concerned. This cause I believe to exist in menstruation and child-bearing, as the following facts conclusively show. Up to nearly the age of puberty, when the habits of the sexes are so nearly the same that we may consider the above causes of tuberculosis entirely wanting, the deaths from phthisis are nearly equal in both. At this period, neither menstruation nor the use of alcohol can have any influence. On the approach of menstruation, the deaths among the females increase with singular rapidity up to between 20 and 30 years, the period of greatest activity in the female reproductive system. At this time, five women die of phthisis to every three men. This ratio gradually diminishes during the next decade, as the uterine system becomes less and less the pivot upon which the health of women turns, till finally, at about 43 or 44 years of age, the ratio of deaths from this disease again becomes equal to that among the males. For a few years afterwards, the same process goes on; but it ceases at about the age of 50, and afterwards remains stationary. Now, this is precisely the age at which the reproductive function of women ceases. These facts are so striking and so regular in all mortuary statistics that it is impossible not to agree with the conclusions I would draw. In England,¹ in 1848, the deaths from phthisis in persons over 45 years of age were as follows:—

Males	:	:	:	:	:	:	:	:	:	5014
Females	:	:	:	:	:	:	:	:	:	5521

This disproportion would be still further increased if allowance were made for the greater number of females living at that age. From these figures we must conclude, that were it not for menstruation and its accompaniments more males would die of phthisis than females, notwithstanding the many unfavourable influences that the latter have to contend against. We might, indeed, expect 11 males to die for every 10 females—the ratio occurring above 45 years of age. To what is this fact due? It cannot be that the male constitution is more predisposed to the disease, for they are less disposed to disease of almost every kind, and in childhood there is very little difference in regard to phthisis. It cannot be the different habits of life of the sexes, for these all favour the males, and they are as strongly marked after 45 years of age as before. There is only left the fact that men are six times as much given to intemperance as women.

¹ In Bavaria, where the habits of the sexes are much more similar than in England or this country, as they assist in agriculture and other out-door employments, there died in seven years of phthisis 58,900 males, and 57,700 females, of all ages.

I have supposed above that the effects of the various anti-hygienic influences to which women are peculiarly exposed could not be represented in a numerical form. But this *can* be done, approximately at least, for it is in the country alone that these habits bear with peculiar force upon the female sex. In cities the habits and occupations of the sexes are more on an equality. But even here the advantage is, to some extent, with the males. Yet in spite of the unfavourable influence of menstruation and child-bearing more males than females die of phthisis in almost every city, year after year, when the preponderance of female population is especially great. In London there died of this disease

1835.			1854.		
Males	.	4,057	Males	.	3,914
Females	.	3,630	Females	.	3,340

and the proportions were nearly the same in every intervening year. The same fact is true in nearly every other large city of England. In New York there died of this disease—

1853.			1854.		
Males	.	1,397	Males	.	1,538
Females	.	1,342	Females	.	1,494

There must be some influence at work upon the males more than sufficient to counterbalance the evil effects of menstruation and bad hygienic influences taken separately, and nearly sufficient to neutralize both taken together. If we compare the males and females above 45 years of age, and living in cities, we shall eliminate both these influences to a great extent. Accordingly, under these circumstances, we find in London, in 1854, dying of this disease—

Males	.	.	.	.	.	.	.	.	.	1,010
Females	.	.	.	.	.	.	.	.	.	620

Or five males to every three females—exactly the reverse of the most unfavourable circumstances under which the females are placed.

I would not be understood to attribute *all* this difference to the use of alcohol, for other facts do not show so great an influence from that agent. But I believe it will appear, further on, that a part of it may, with truth, be held to result from bad habits in this respect.

d. People pursuing different occupations, from various reasons, are more or less given to the habit of using alcoholic liquors. The proportion of deaths from phthisis among these various pursuits, although obviously incapable of furnishing the data for an accurate determination of the question, will afford us probabilities sufficiently strong to corroborate or invalidate the conclusions already drawn from the facts previously presented. Lombard, in the *Annales d'Hygiène*, has given an extended table showing the effects of trades and occupations upon the frequency of phthisis. From this table I have selected, at random, some occupations under favourable hygienic influences, some of which are especially given to intemperance, while others are generally temperate. They occurred in the hospitals of Hamburg. There were admitted—

		Of all diseases.	Of phthisis.			Of all diseases.	Of phthisis.
Soldiers Carpenters Labourers	}	. 153	41	Copyists	}	. 14	2
				Merchants			
				Instructors			
				Students			

The first of these divisions is composed of occupations, the members of which are generally intemperate; or at least they are much more so than the latter. In the first class 27 per cent. of the cases admitted were of phthisis; in the second, only 14 per cent.

Some other occupations, peculiarly disposed to intemperance, presented a still greater ratio of cases of phthisis. An instance of this is seen in the case of the vagrant musicians, who exhibited the largest ratio of cases of phthisis. They are at the same time, perhaps, more prone to intemperance than any other occupation.

The same results appear in the report of the registrar of Paris for 1852. The following occupations were taken from this report, at random, in the same manner as those above. The figures represent the deaths from phthisis out of each thousand persons exercising those professions, during the year in which the report was made. A much more striking case might easily have been made out; but these occupations were selected in each case without knowing what the result was going to be:—

Soldiers	} . . . 4.04	Artists	} . . . 3.07
Innkeepers		Advocates	
Liquor-dealers		Instructors	

Here, again, we have the same result though in a less striking degree—probably because the members were greater. Those professions inclined to intemperance are especially prone to phthisis.

Dr. Neufville (*Boudin's Statistique Méd.*), in a similar table, says, that in Frankfort-on-Mayne during a period of eight years, among—

Magistrates and Lawyers	6.8 per cent. of the deaths were from phthisis.				
Tailors	39.9	"	"	"	"
Shoemakers	36.4	"	"	"	"
Carpenters	35.9	"	"	"	"

The same result appears here still more strongly. It is difficult to find among the various statistics upon this subject, a single profession, the members of which are sufficiently numerous to prevent liability to a chance result, in which there is a large ratio of deaths from consumption, without that profession being especially addicted to the use of alcoholic liquors. Thackrah, in his work on "the effect of trades and professions upon health," says of almost every one, in which the number of deaths from phthisis is large, that it is also given to intemperance.

But there are a few occupations, the members of which are known to be peculiarly intemperate. An instance of this occurs in soldiers; these, in countries where enlistment is voluntary, are, almost to a man, addicted to the immoderate use of alcohol. They are, at the same time, more favourably situated as to hygiene than the bulk of the population; their food is abundant and of good quality, their clothing is good, they are neither sedentary in occupation nor overworked, nor exposed to vicissitudes of weather (except in actual service). Yet in spite of all these favourable influences they are more liable to consumption than the population at large among whom they reside. According to Tulloch (statistical returns of the British army), those in England afford twice as large a proportion of deaths from tubercular disease as the males of the same age who are not in the army. The same author, however, says, that in some parts of India, where the soldiers are particularly intemperate, the deaths from phthisis among the European troops are only about one-fifth as great as the general average in England. He draws the inference that intemperance may be con-

nected with an exemption from phthisis. It would hardly appear to be a just one, however, even from his own figures; for the deaths from this disease among the Sepoys, who are remarkably temperate, are still less numerous than among the Europeans. In other parts of India, too, where, probably, the same degree of intemperance prevails, the deaths rise to about the general average of England, showing that the freedom from the complaint is due to other causes (probably the climate). In these latter situations the native troops present a less mortality than the Europeans. In connection with this theory of Tulloch, is the fact that in some of the West India Islands, where the facilities for intemperance are quite as great as in India, the deaths from phthisis are more numerous than in any other division of the army, amounting in Barbadoes to 15 annually in each thousand soldiers. These differences are unquestionably more due to climate than to any difference in addictedness to intemperance.¹

Among other occupations notoriously addicted to intemperance are victuallers, pot-boys, and brewers' draymen. Dr. Guy (*Journal of London Statistical Society*) has given the proportion of deaths from phthisis among persons engaged in these occupations.

Neither of these kinds of business is peculiarly unhealthy, yet out of 25 cases of all diseases occurring among pot-boys, 8 were cases of phthisis—a proportion nearly twice as great as obtains among other patients in the same hospital. A greater proportion of victuallers than of tradesmen generally, and of brewers' draymen, than of other labourers, died of the same disease, and also at an earlier age.

These proportions must be considerably increased when we take into consideration the fact that intemperance is also a cause of many other diseases, and would thus diminish relatively the *proportionate* number of cases of phthisis as compared with the total of deaths from all diseases. The following table, although alone of no great value, tends to corroborate the deductions of Dr. Guy. It is extracted from the reports of the Registrar-General of England, and shows the relative number of deaths from *all diseases* among innkeepers and beer shop keepers, compared with grocers, at different periods of life, among an equal number of each:—

Grocers. Innkeepers, &c.			Grocers. Innkeepers, &c.		
25 to 35 . .	100	181	55 to 65 . .	100	170
35 to 45 . .	100	196	65 to 75 . .	100	164
45 to 55 . .	100	179	75	100	145

Here the excess of deaths among the latter class is most marked at that period of life when the greatest number of persons die of phthisis. The same table also shows, approximately, how much allowance should be made in the facts presented by Dr. Guy, for the greater mortality among those occupations especially addicted to intemperance.

Somewhat analogous to the difference of occupation is difference of race. It has been the custom to attribute the large proportion of deaths from phthisis among the negro population of our northern cities to an unfavourable climate. May it not be that a part of it, at least, is due to their greater proclivity to intemperance?

It is a well-known fact that the lower orders are much more obnoxious to tubercular disease than the upper. Thus in Geneva, according to Lebert,

¹ Sweet (*Diseases of the Chest*) suggests that the freedom from phthisis in India may be due to the effects of the climate upon the liver, an organ believed to be, to some extent, vicarious in function with the lungs.

among the wealthy, 6.8 per cent. of the deaths were from those diseases, while it rose to 23.3 per cent. among the poorer classes. This difference, much greater than is commonly supposed to exist, could hardly be, unless a variety of causes concurred to produce it. It has been customary to attribute it to poor diet, vitiated air, the influence of certain occupations, &c. May it not be that the use of alcohol also has its influence in producing the result? The lower classes are certainly much more addicted to its use, and, in an agent so potent, it is, at least, a suspicious fact that those who use it most largely are most liable to tubercular deposit. At any rate so decided a difference in proneness to these diseases could hardly exist, if the use of alcohol had any very decided influence in preventing them.

Another class analogously situated, but, per force, particularly temperate, is to be found in the denizens of prisons.

Ancell (*On Tuberculosis*) has collected from the records of various prisons in England and this country, the causes of death among 76,000 prisoners. Of 1,872 deaths among these persons, 645 were of tubercular diseases.

This is certainly a very large proportion of deaths from such diseases, if they be compared with the mortuary statistics of society at large. But prisoners are composed of a peculiar class of individuals. A very large proportion of them are males, and almost the entire body are between 20 and 60 years of age. It is accordingly with people under these circumstances that they should be compared, in order to arrive at anything like an accurate determination of the effects of the discipline and confinement of a prison. The deaths among the above prisoners from tuberculosis were 34 per cent. of the whole. In England, in 1847, there died 116,000 males between the ages of 20 and 60 years. Of these, 36,600 were of tubercular diseases. This is about 32 per cent., a trifle less than occurred in the prisons. The ages of the prisoners is not given, but it is probable that a larger proportion of them were young men than in society at large. Some of them, also, were women. Both these circumstances would tend to increase the relative proportion of deaths from tuberculosis in comparison with the community in which they lived. It is certain then that there is no especial proneness among prisoners to tubercular diseases, so far as these statistics go; it appears to me that the tendency is rather the other way. No account is here taken of the effects of the various concomitants of prison discipline, the sedentary life necessarily led, the solitary confinement and deprivation of light, and, above all, that depression of spirits inseparable from such a position. All these must have an influence in the production of tubercular disease. There is still another cause which would tend to give a larger ratio of tuberculosis among prisoners than really exists. The deaths from other diseases would be diminished by the abstraction of alcohol, and thus present a *relatively* larger number from tuberculosis, unless these latter were diminished in the same ratio. If then, under all these adverse circumstances, the deaths from tuberculosis are not more numerous than among other individuals, we must conclude that there are some saving circumstances in prison life. It is difficult to imagine the existence of any unless it be the forced temperance existing there.

e. The statistics upon which those who have expressed the belief that alcohol is a prophylactic against phthisis, have principally depended for the support of their opinion, have generally been a comparison of the deaths from this disease among individuals known to have been intemperate with those occurring in society at large.

This mode is free from most of the causes which have given so much uncertainty to the statistics already brought forward. It is, perhaps, as free from uncertainty as any that can be adopted; and opinions founded on such facts, and adopted and presented by men of reputation in the profession, certainly deserve the most careful consideration. At first view, such a method might appear to be entirely free from any doubts or uncertainties. I believe, however, that there is one circumstance, overlooked by those who have presented such statistics, that casts a shade of doubt upon the entire accuracy of conclusions drawn from these data.

Dr. J. B. S. Jackson, in the *New England Quarterly Journal of Medicine and Surgery*, has given the results of the autopsies of 35 persons known to have been intemperate, "many of them grossly so." In these he found tubercles in the lungs in five instances, although only two of them died of phthisis. He concludes, from this, that such persons are less likely to die of that disease than others. Is this conclusion a just one so far as these figures go? How do they compare with those presented by the statistics of the society at large, in which these cases occurred? It is not likely that any of the autopsies performed by Dr. J. were upon persons under 20 years of age, as intemperance below that period is rare. We shall also, perhaps, not be far from the truth in supposing them all to have been males. I am unable to present the proportionate number of cases of deaths from phthisis among these classes of persons in Boston for the purpose of comparison; but they cannot differ materially from those in New York.

In this latter city there died, in the year 1854, 5,683 males, of 20 years and upwards, from *all* diseases; of these, 1,254 died of phthisis. To these a certain number should be added for those who died of other diseases, while affected with tubercles in the lungs, if we would obtain the number of those whom an autopsy would have proved to be tuberculous. (It is evidently with such that Dr. Jackson's cases should be compared.) The following observations of Louis (on phthisis) may be taken as representing the number that should be added for this reason: of 358 persons dying in the wards of Chomel, he found 123 to have *died* of phthisis, and 40 others to have *presented tubercles in the lungs*, but to have *died* of other diseases. We may conclude then that an autopsy would have revealed tubercles in the lungs of 1,662 persons out of the 5,683 spoken of above. The cases of Dr. Jackson give a percentage of 14.3 cases of consumption, while those of New York are 29 per cent., taking the temperate and intemperate together. The comparison, thus far, certainly bears out the conclusions of Dr. J. The number of cases, however, is small—perhaps so small as not to be of any great value, unless corroborated by other facts. Neither is it stated whether the cases occurred in hospital or private practice; this must be an important item in drawing conclusions from such data.

The proportion of consumptives who die in our hospitals is smaller, usually, than that in the community at large. Either such chronic cases are discouraged from entering the hospital, or those who know themselves to be sufferers from this disease prefer to pass the short portion of life that remains to them among their friends. It is certain that the proportion of deaths from consumption in hospitals is much less than out of them. Another important correction is to be applied to these and similar cases before they can be held to indicate the degree to which the intemperate are prone to tubercular disease. This is, the fact that the grossly intemperate are short lived. They not only have their own peculiar diseases, but are also much more subject to many others than the temperate. May it not be the

case, then, that, in the statistics of Dr. Jackson, the number of those dying of *other* diseases than phthisis was increased very largely, while the number of those affected by the latter remained stationary, or even increased also, but in a less degree?

(I believe this source of error has been often overlooked in these comparisons, as it evidently was in the article under consideration. It is not unlikely that this comparison of deaths from phthisis with the entire mortality of the intemperate, in the loose way that the non-professional public is accustomed to reason on medical subjects, may have assisted in giving origin to the popular prejudice as to the antagonism of alcohol to this affection; for among such persons, whether the opinion be true or not, it cannot be regarded otherwise than as a prejudice.)

If the intemperate lived only half as long as people generally of their own age, it is obvious that they would be exposed to the danger of contracting a deposit of tubercle for only half as long a period; and consequently, in a given number of deaths among such individuals, we ought to expect to find only half as many cases of phthisis (provided all ages were equally subject to that disease). If we suppose that the intemperate live only half as long as others, the cases which we are discussing would appear to present almost exactly the same ratio of deaths from phthisis as society at large. But it is highly probable that those who are intemperate, "and many of them grossly so," do not live half as long as others. The facts which I depend on to elucidate and prove this important point are contained in the "Report of the London Statistical Society" for 1851, in a paper by Mr. Neison, the actuary of a London insurance company. According to this author, the expectation of life among the intemperate (and he seems to give this word nearly the same signification as Dr. Jackson) is to the general average as 1 to 3.24. This is a result for which my readers will probably be as little prepared as I was myself. It was not arrived at, however, with reference to the question we are at present discussing, and is all the more valuable on that account. The source from which it emanates, too, and the large number of cases from which it is deduced (357), leave no room to question its substantial accuracy. But, singularly enough, the very facts presented by Dr. Jackson furnish us the means of corroborating the results arrived at by Mr. Neison. This will be seen from the following comparison:—

Dr. Jackson presents us with two *deaths* from phthisis, and three deaths from other diseases in patients already labouring under the former. As already stated, Louis, in a number of individuals, of whom one hundred and twenty-three died of phthisis, found forty others dying of *other* diseases while phthisical. In Louis's table, these cases are as 1 to 3 of the whole; in Dr. Jackson's, they are as 5 to 3. It would thus appear that the mortality was nearly five times as great in a given period (the length of time which phthisis lasts) among the intemperate reported by Dr. Jackson, as among those at large, reported by Louis. This must certainly be the case, unless we suppose that those diseases, and that state of the system brought on by the use of alcohol, particularly predispose to phthisis, an alternative that those who believe in the prophylactic power of that agent will hardly prefer to accept. The similarity of the ratio given by Mr. Neison, and that drawn from the statistics of Dr. Jackson, tend strongly to prove its correctness.

The application of these facts to the preceding is easy, and will show a result widely different from the conclusions which would be drawn, at first

view, from the statistics of the autopsies made by Dr. Jackson. Thus, out of a number of persons sufficiently great to furnish annually, if they were intemperate, thirty-five deaths from all diseases, of which five would present tubercles in the lungs, we should have, if they were temperate, only eleven deaths from all diseases, of which only 2.6 would present tubercles in the lungs. Thus it will be seen that these cases, which were supposed to furnish an argument for using alcohol to prevent phthisis, show, so far as we can depend on so small a number of observations, a directly contrary conclusion, the number of deaths from that disease being nearly twice as great among the intemperate as among individuals generally; although, when compared with the total mortality of each class, there is a relative diminution in about the same ratio.

Dr. Peters, of New York, in the *New York Medical Journal* for 1844, has given the results of the autopsies of "nearly seventy" persons dying suddenly, or found dead in the streets, "who were intemperate." In these, he did not meet with a single instance of tubercular abscess in the lungs. A small number of chalky tubercles were frequently found, and also a number of cicatrices, surrounded by scattered tubercles. These last facts would seem to imply, from the manner in which they are stated, although it is not directly so said, that the author of the paper believed them to have been cured, or to be in the process of cure, from the use of alcohol.

These facts, though related throughout in a loose and inaccurate manner, deserve a careful examination, as they are one of the few instances where the author does not indulge in theory, and seems to have none to sustain. There seems to be some doubt, however, as to whether all of them were really cases of intemperate persons. They were, many of them, instances of persons found dead in the streets. In these cases, it would seem to be difficult to substantiate the fact of intemperance with certainty. But, allowing this to have been the case with *all* of them, what are the conclusions which can legitimately be drawn from them? Certainly not that tubercular abscesses never occur in persons of intemperate habits. Within a few hours of the time of writing this, I have seen a case of extensive tubercular abscess, in both lungs, in a man who has not only been habitually intemperate for many years, but has continued in the habit up to the present time. Neither do I believe that the observations are numerous enough to enable us to come to *any* conclusion with certainty, for the following reasons: A large proportion of these cases must have been men; and, for the purposes of comparison, we shall probably not greatly err in supposing them all to have been so. As they died suddenly, there could have been no opportunity for the deposition of tubercle during their illness. Also from the nature of phthisis, deaths do not occur suddenly, or in the streets, from it.

There is no reason, then, for supposing that more cases of tubercle would be found among these seventy than among the same number of persons taken at random in the streets, if we took them of the same age (probably none of these were below 20 years of age), unless, as Dr. Peters seems to suppose, intemperance is a prophylactic against consumption. It is a matter somewhat difficult to determine how many cases of tubercular abscess we should find in seventy persons in society at large. But it may be done with an approximation to certainty. In New York, where the observations of Dr. Peters were made, there died, in the year 1854, 1254 males, of 20 years of age and upwards, of phthisis. At the same time, there were living in the city, approximately, 169,000 such persons, taking the entire population of the city, at that period. at 600,000, a number which must have been

very near the truth, and supposing them to be divided, as to age, as they were in 1850. This would give one death annually to one hundred and thirty-five such persons. The observations of Louis, the most accurate that have ever been made on the subject, show that the average duration of the disease is about twenty-one months. This would give one person *sick* of phthisis to about seventy-seven living. This result supposes that all the cases of the disease terminate fatally, a result far from the truth. With this source of error, however, enough has been said to show the fallacy of the conclusion arrived at by the author of the essay, even if the looseness with which the facts are related did not deprive them of most of their value. The duration of phthisis, however, is short, after the formation of abscesses. Probably five months would be quite as long, or longer, than the average duration of life under such circumstances. If this is allowed to be a fair representation, we should expect to find only one case of tubercular abscess among three hundred and twenty-three persons taken at random. The chances then would be more than 4 to 1 that among seventy persons we should find no case of abscess in the lungs. But individuals so far advanced in phthisis would hardly be much out of doors; neither would they be likely to continue in habits of gross intemperance to such an extent as to die in the streets. I believe it to be common to the observation of all that those who are sick to such a degree, know too well the evil effects of intemperance in general, to continue in the habit of it. Of thirty patients at the Eastern Dispensary in New York, who had been in habits of intemperance up to the time of commencement of the disease, only twelve continued the habit to the same degree as before. Of the others, eleven ceased using alcohol partially, and seven totally.

In consideration of these facts, I believe no one will conclude that the observations of Dr. Peters favour the theory that the intemperate are less liable to phthisis than others. The number of cases in which there were cicatrices, or other appearances indicative of a tendency towards health, is not given. Such appearances, at the time the paper was written, might very properly have been considered as extraordinary. But, at present, the observations of pathologists have shown them to be common. The following table, from Ancell on Tuberculosis, shows that they are "frequently found:"—

In 100 autopsies,	Rogée found them	51 times.
" 116 "	Boudet " "	61 "
" 73 "	Bennet " "	16 "
" 160 "	Beau " "	157 "
<hr/> 449		<hr/> 285

These were deaths from other diseases than phthisis. They show that, if such appearances are to be taken as indicative of pre-existing phthisis, the disease much more frequently ends in recovery than is supposed, and that we are not justified in supposing with Dr. Peters that his cases were in process of cure from the use of alcohol.

The following facts are given by Mr. Neison, the actuary of a London insurance company, in the *Journal of the London Statistical Society*, in attempt to determine the comparative length of life of the temperate and intemperate. His conclusions upon this point have been given previously.

The diseases of which the three hundred and fifty-seven intemperate persons died, upon which his calculations are founded, are also given. Of these, forty died of phthisis (and three others of hæmoptysis, who should probably be classed with them).

These cases were reported to him by various physicians, and therefore represent, probably, with considerable accuracy, the diseases of which they really died. But the effects of their intemperance were such that only one hundred and ten temperate persons would have died in the same time out of a population sufficient to have furnished three hundred and fifty seven, had they been intemperate. And a population sufficiently large to have given forty deaths from phthisis in a given time, supposing them intemperate, would furnish only twenty-one if they were temperate.

This last calculation is based upon the supposition that all the three hundred and fifty-seven were above 20 years of age (which was the fact with four or five exceptions), and the fact that in England, in 1848, 214,000 persons died above 20 years of age, and that of these 40,000 were phthisical; that is, $214,000 : 40,000 :: 110 : 21$.

There are several circumstances, however, in connection with these facts, which give a degree of uncertainty to this strongly-marked result. The intemperate are exposed to many of the recognized causes of phthisis. Some of these are their greater exposure, their less amount of earnings, and consequently poorer food and clothing, and the vitiated air they so frequently live in.

But it would hardly seem possible that these circumstances should cause half the deaths among the intemperate, which must be the case to reduce 40 to 21. On the other hand, mention will be made further on of a fact which will, perhaps, neutralize the effects of these anti-hygienic influences.

A method of determining the influence of alcohol, which would, perhaps, be as free from elements of uncertainty as any which can be attained to, I have endeavoured to present in the following statistics. In the compilation of them, I have tried to avoid mistake by excluding every case which seemed to present any uncertainty. Although no autopsies were made in the cases of death, the cause can hardly be considered as doubtful; as, however difficult the diagnosis of consumption may be in its earlier stages, it can present but little difficulty in the later.

In a small country town near the centre of New England, presenting no peculiarities of soil, climate, or other natural causes to make it differ in health from the surrounding country, I have been well acquainted for the last seventeen years. The inhabitants are almost exclusively engaged in agriculture, and are well fed, well clothed, and housed, almost without exception.

Temperance, however, has not been so popular as is generally the case in that part of the country. Of the males living within its limit during the period above indicated, above 20 years of age, 114 were intemperate and 50 temperate (using the word in the sense I have previously done); that is, considering as intemperate all those who made a daily or habitual use of intoxicating liquors. Many of these were decidedly intemperate in the usual acceptance of the term.

The form of liquor most largely used was cider, but stronger ones were by no means sparingly employed. Of those classed as temperate, most did not drink at all, while others did occasionally. Of the former, during the period indicated, 19 died of phthisis; of the latter, only 6. If the proportion had been the same with both classes we should have had 8 of the latter instead of 6. If the former class had been as healthy as the latter, there should have died, of this disease, only 14 instead of 19. Reducing them both to a decimal form, 12 per cent. of the temperate and 16.5 per cent. of the intemperate died of this disease during the period.

This result could hardly depend upon any cause but that to which it is attributed, as both classes were engaged in the same out-door occupations, and both were supplied in equal abundance with all the necessities of life. The only apparent chance of error is in the smallness of the numbers. If, in the examination of the other sex, the same result occurs, the truth of the conclusion will be very strongly corroborated. The facts were as follows: Within the same limits, and during the same time, there were living 184 women above 20 years of age, the excess of females being caused principally by the greater emigration of males. They were all engaged in active occupations, the uniformity in this respect being even greater than among the males. But their habits as to the use of intoxicating drinks were strikingly different. Only 17 of them were intemperate, in the sense in which the word is used above, while 167 were temperate. Of the former, 3 died of phthisis; of the latter, 25. Reduced to a decimal form 18 per cent. of the intemperate and 15 per cent. of the temperate died of this disease. These results are again in favour of the temperate. The statistics of both sexes not only point to the same conclusion, but they do it with a remarkable similarity; the difference being 4.5 per cent. among the males, and 3 per cent. among the females. This coincidence, under the difference of constitution, dress, occupation, &c., of the sexes is quite striking and cannot but be regarded as strongly indicating the correctness of the conclusions arrived at. These two series of facts may be advantageously united into one view in the following manner:—

				DEATHS FROM PHTHISIS AMONG			
				Temperate.	Intemperate.	Temperate.	Intemperate.
Males	.	.	.	50	114	6	19
Females	.	.	.	167	17	25	3
Total	.	.	.	217	131	31	22
				PER CENT OF DEATHS AMONG			
				Temperate.	Intemperate.	Temperate.	Intemperate.
Males	.	.	.	12.	16.5		
Females	.	.	.	15.	18.		
Total	.	.	.	13.5	17.25		

There is another way in which these tables may be compared, which will be of advantage in illustrating the subject.

The degree of intemperance among the sexes in general is about as 6 to 1 in favour of the females.¹ In the town from which these data were drawn it was about as 20 to 1 in their favour. The most extensive tables show that about 10 females die of consumption to every 9 males, when the latter drink six times as much as the former. Now, when they drink twenty times as much, they ought to be still more exempt, if the use of alcohol is prophylactic in its effects as to this disease (unless we suppose that the common average of intemperance is the golden mean, to vary from which in either direction would be prejudicial). In this town, where this ratio between the sexes in regard to the use of alcohol is so different from usual, the deaths from phthisis are nearly equal in the sexes in proportion to their numbers. The inference, then, from these facts would seem to be that the use of alcohol is prejudicial, and more so when used by men than by women. May it not be that this latter fact is to be accounted for by the greater extent to which its use is carried by the men individually, as this was certainly the case in the place of which I am speaking. These statistics are

¹ This is the proportion in England; it is, probably, the same nearly in this country.

almost entirely free from those disturbing causes which give a greater or less degree of uncertainty to nearly all the other tables presented. Indeed, it is the only kind of comparison which can determine the question with accuracy. A more extended series of facts of the same kind would forever set the question at rest. Yet theory is ever so fascinating that, on this important question, none have been before given to the public.

The facts which I am about to present were obtained at the Eastern Dispensary, in New York, among a class of patients who are largely addicted to the use of alcoholic liquors. They are analogous to those last given. I questioned 67 patients affected with phthisis, in the order in which they chanced to present themselves for treatment. Of these, I found that 36 had been accustomed to the regular use of alcohol, while 31 were habitually temperate. In order to obtain a standard by which to determine whether a greater or less proportion of these phthisical patients were intemperate than obtains among the class of people in general, who resort to such institutions for medical treatment, I questioned an equal number of other patients affected by diseases not supposed to be at all influenced by the use of alcohol (principally pleurisy, bronchitis, rheumatism, and diseases of the heart). These were also taken in the order they presented themselves, and were divided as to sex precisely as the former. Of these latter 25 were temperate and 42 intemperate. Both of these series of cases may be advantageously presented in a tabular form in the following manner, separating the sexes:—

MALES.			FEMALES.		
	With phthisis.	With other diseases.		With phthisis.	With other diseases.
Temperate . . .	6	13	Temperate . . .	25	29
Intemperate . .	25	18	Intemperate . .	11	7

Here it will be seen that the statistics of each sex give the same result, and in a degree nearly the same. The males, however, were somewhat more unfavourably affected by the use of alcohol than the females (a result arrived at in one or two instances before, and which I attribute to the greater extent to which they use alcohol). The fact that the statistics of both sexes point in the same direction cannot but be regarded as strengthening the probability of their correctness. I have no doubt as to the general accuracy of the accounts given by the patients as to their habits in regard to the use of alcohol. But any attempt at deception on their part would be as likely to occur among those affected by other diseases as by phthisis; so that in a comparison of results like that above, the errors in this respect, if any existed, would probably neutralize each other.

g. In persons addicted to any habit which we suspect to favour the production of tubercles in the lungs, we should expect the disease to occur at an earlier age than those under more favourable circumstances. The converse of this also we should expect to be true; that if they were attacked later in life the habit must be prophylactic in its effects. This method of determining the question under discussion I attempted to apply to the patients at the Eastern Dispensary, mentioned in the last section. The average age of the temperate who were sick with phthisis was 34.1 years; the average age of the intemperate 40.1 years. The following table presents the same facts, separating the sexes:—

	Temperate.	Intemperate.
Males	34.	40.8
Females	34.2	38.3
Average of both	34.1	40.1

This is a result that I did not expect would occur, for its indications are directly the opposite of most of the facts already adduced. The average age of the temperate was six years less than that of the intemperate, and nearly the same result is indicated by a separate examination of each sex. Several circumstances are to be taken into account in determining the correctness of this result. Most of these patients were of Irish nativity, and consequently were not very sure as to their exact age, usually understating it somewhat. Another, is the fact that persons of a naturally feeble constitution are less apt to fall into habits of intemperance than those of an opposite physical make. We should naturally expect the former to be attacked with the disease at an earlier age than those of a more robust form. Another still is, that many persons fall into habits of intoxication after the period at which phthisis is most apt to occur, while very few who are intemperate in their youth cease the use of alcohol in after-life. In other words, there is a *greater* proportion of intemperate persons at that period of life when the proclivity to phthisis is *least*, and *vice versâ*. It is difficult, if not impossible, to determine the exact degree to which these facts would affect the above table. It is certain, however, that they would considerably reduce its value as indicating the prophylactic virtues of alcohol in phthisis, and it is not improbable that they might entirely reverse the conclusions to be drawn from it.

There is one circumstance which, I believe, will affect somewhat all the statistics presented in connection with this division of the subject (the effects of alcohol on those predisposed to phthisis). The observation of all will, probably, bear me out in the opinion that those who have naturally a vigorous constitution, broad shoulders, well-developed muscular system, and strong digestive powers, if they have not a stronger appetite for alcoholic liquors than those of an opposite physical conformation, at least indulge in them more freely. Those who are naturally of a feeble constitution, or in a low state of health, or inclined to pulmonary disease, would be more likely to abstain from them, from prudential motives, if not from a natural aversion to their stimulus.

The same fact shows itself in a comparison of the sexes; females, with a naturally less robust health (and probably a stronger proclivity to phthisis), being less inclined to the use of intoxicating agents than the other sex. Of course, the habit is formed, in all cases, after the constitution is established. In all the previous instances, if this opinion be true, temperance will appear less favourable to health than it really is, so far as this disease is concerned. But I prefer not to leave a question of this importance to a vague impression, however strong or common it may be, when it is possible to substantiate it by facts.

In the town previously referred to, of one hundred and fourteen intemperate men, seventeen were of such a constitution and physical form, that they would be thought more predisposed to phthisis than others. Of fifty temperate persons, twelve presented the same feeble constitution.¹ This gives 15 per cent. of the intemperate, and 24 per cent. of the temperate. It should be borne in mind that this was not an acquired state from the use of alcohol, but was original. A difference so marked as this could hardly depend upon the small number of cases; while the fact, if such it be, shows the difficulty of arriving at the truth in such a question as that we are discussing. It also shows that statistics ought to point clearly and strongly

¹ In such a matter, the judgment, of course, has to be exercised as to the constitution of individuals; but I have endeavoured to exercise it without bias.

to a freedom from phthisis among the intemperate before it can be accepted as a determined fact. Not only has this not proved to be the case, but nearly all I have been able to collect, when freed from sources of error, point to an opposite conclusion. When this conclusion is strengthened by the considerations last presented, *it seems to me almost conclusive that the use of alcohol not only has no power to defend those predisposed to phthisis from its attacks, but would, with little doubt, change the predisposition into actual disease.*

In connection with this opinion, as to the prophylactic influence of alcohol in this disease, I cannot forbear saying a few words upon the moral aspects of the case. It is true that this is not the view proposed in the question for discussion. It is true, also, that the evil effects resulting from the habitual use of alcohol do not affect the fact of its influence upon this disease, whether that influence be favorable or not. In a purely scientific question this ought not to influence our opinion. But theories give origin to practice, and in this way have a bearing upon the well-being of the community. We ought therefore to demand a rigid proof of the truth of the theory before putting it in practice. When phthisis has actually commenced, it might, perhaps, be prudent to prescribe the use of alcohol with only a *probability* of advantage resulting from it. But with persons who are still in health, I believe the influence of such an agent as alcohol would be most *funeste*. The injury resulting from it would probably far outweigh any prophylactic power it could possibly possess. In this view of the case, I am happy in having arrived at the conclusion, uninfluenced, however, by moral considerations, that it has no virtues as a preventive of this much dreaded disease.

Concerning the second part of the question—the effects of the use of alcohol upon cases where tubercle has already been deposited—it might perhaps be considered sufficient to have shown that this agent probably favours the approaches of tuberculosis in the healthy, to argue that it could be of no very great benefit in those who are actually diseased. This inference would be very strong with all, except those blinded by Hahnemannian theories. If it should prove that the inference was not correct, it would certainly appear to be an argument in favour of that absurd system. But I believe it can be shown to be correct by actual observation of facts, which, if judiciously and fairly presented, are ever more convincing than mere deductions. That in such cases alcohol has no *marked* remedial value, I am as well convinced, from my observations, as I am of any fact in therapeutics. I am too much accustomed, every day, to seeing cases of phthisis, among the lower orders in this city, which have not only had their origin at the same time that intoxicating agents were being used regularly to excess, but have pursued their usual downward course to a fatal termination, notwithstanding the same habits were kept up, to have faith in their being able to cure such cases. These patients, often too unwilling to pursue the course recommended by physicians in other respects, frequently save us the trouble of experimenting with alcohol by obstinately adhering to its use, whether we will or no.

The following cases of phthisis presented themselves at the Eastern Dispensary of New York within a few weeks of each other. They are a part of those which have been already referred to. In all of them, this agent had been more or less largely used during the whole course of the disease. The duration of such cases is always difficult to be ascertained with accu-

racy. But such patients rarely present themselves till the disease is considerably advanced. Without doubt, all of them had been using alcohol long enough to have effected a cure, if it ever could be done by such a medicine. I here present the duration of these cases as nearly as it could be ascertained from the patients themselves, dating from the commencement of the cough :—

Sex.	Duration.	Sex.	Duration.
Male . .	2 months.	Female . .	2 months.
" . .	1 year.	" . .	4 months.
" . .	2 years.	" . .	2 years.
" . .	1 year.	" . .	8 months.
" . .	1 month.	" . .	6 months.
" . .	2½ years.		
" . .	2 years.		
" . .	2 years.		
" . .	1 year.		
" . .	5 years.		
" . .	6 months.		
" . .	15 months.		
" . .	2½ years.		
" . .	9 months.		

The duration of these cases is seen to vary from one month to five years, most of them being sufficiently long to have afforded the remedy ample scope for action,¹ if it has any. Yet, as they all presented themselves now for the first time, it may be inferred that they considered themselves worse than at any previous period. The physical signs varied from those of a slight and recent deposit of tubercle to those of extensive vomicae. There was also a general, but not regular, concordance between the duration of the disease and the gravity of the lesions presented, those in whom the disease had existed longest presenting the most advanced stage. In none of these cases, according to the accounts of the patients themselves, was there any decided change for the better; but the disease had pursued its usual course, with temporary remissions in severity, as is customary.

In order to determine whether the disease is more or less rapid in these cases than in those where alcohol was not used, I present the following cases of that kind for comparison. They were collected at the same time and place as the others, and had either ceased using alcohol, on being taken sick, or had never used it at all.

Sex.	Duration.	Sex.	Duration.
Male . .	5 months.	Female . .	2 years.
" . .	8 years.	" . .	6 months.
" . .	6 months.	" . .	24 months.
" . .	2 years.	" . .	12 months.
" . .	4 years.	" . .	2 years.
" . .	2 years.	" . .	10 years.
" . .	10 years.	" . .	12 months.
		" . .	2 years.
		" . .	4 months.
		" . .	15 months.
		" . .	10 months.
		" . .	15 months.
		" . .	5 years.

In persons of so low a degree of mental cultivation as those who usually present themselves at eleemosynary institutions of this kind, we could not expect their statements, as to the period of access of the disease, to be very

¹ Commencing, as the use of alcohol did, before the disease appeared.

accurate, unless it were very recent. That this is the case with both these tables might be inferred from an examination of them. With these facts in view, we should not place any great reliance upon the actual duration of the disease as given by the patients themselves. But it is not here the actual, but the comparative duration of the two classes that we are seeking; and in this comparison we shall, to a great degree, be freed from this source of error, as it is likely to be as great with one class as the other. It is true, too, that it is not the total duration of the disease we are comparing, but only that to a particular point, viz., that degree of sickness which induces a visit to the dispensary for relief. In so large a number of cases, we may suppose this point of the disease to be nearly the same in those composing each table. With these preliminaries to show that I do not consider the conclusions we shall arrive at perfectly unobjectionable, we will compare the two tables. The average duration of the disease, up to the time the intemperate presented themselves for treatment, was about sixteen months. Among those who did *not* use alcohol during the course of the disease it was 33.6 months. We thus see that the former had been sick only one-half as long as the latter when they deemed themselves sick enough to require treatment. After the former had been sick only sixteen months, they appeared, so far as I could judge, to have arrived at the same period of the disease as the latter at the end of thirty-three months. At any rate, I am very sure that few of them would have lived to make up the difference already existing in the duration of the disease. Louis (op. cit.) has shown that the average duration of the disease in Paris is about twenty-one months. The average duration of these cases had already been about twenty-five months, showing that the patients had over-stated the time they had been sick. There is no reason, however, why the intemperate should have been more accurate in this particular than the temperate. In these—far from living long enough to make up the difference between them and the temperate—I think few would have lived to make up the difference to Louis's average. On the other hand, the temperate, according to their own statement, had already lived a year beyond that period. We can hardly suppose them to have made so gross an error as this in the duration of their illness. On the whole, I think this must be considered as a strong argument in favour of the position that the use of alcohol is not only prejudicial to those predisposed to phthisis, but, in a still greater degree to those already attacked by it. This is what we should suppose, *à priori*, would be the case.

It is difficult, indeed, to conceive how the case could be otherwise. For if tubercle has gained a foothold with greater ease, under the use of alcohol, all analogy would cause us to believe it would still exercise the same influence in extending the deposit of that substance, if it did not increase the rapidity with which it undergoes its usual changes. But suppose, for an instant, that the influence of alcohol were favourable on those predisposed to the disease, and, also, that its therapeutic effects were valuable. In a person continually using it, it is difficult to see how tubercle could gain any foothold. For then the remedy would be on the spot at the moment when the malady was commencing, and was, consequently, in the circumstances most favourable for cure. Yet cases of phthisis, under such circumstances, continually occur in the observation of every one; and, in those related in this essay, they occurred more often than among the temperate. Among the lower classes of this city the statistics already given show that more than half (36 against 31) use alcohol throughout the dis-

ease, probably to at least as great an extent as it would ever be recommended as a medicine. And this is more marked among the males, more than four-fifths using it. Yet the deaths from this disease here, among the males, are regularly more numerous than among the females. I should not, probably, overstate the facts if I said that of the 1,500 males dying of phthisis each year in New York, 1,000 were attacked with the disease in spite of the reputed prophylactic virtues of alcohol, and died of it in spite of its vaunted curative powers. How can it be called a *medicine* (for this disease) in the face of such facts?

In order to determine the effects of a regular and moderate use of alcohol upon those already the subjects of phthisis I have deemed it justifiable to have recourse to experiment, and accordingly I selected several cases from the Eastern Dispensary, in different stages of the complaint, in persons some of whom were still using alcohol in some form, according to custom, while others had given up its use, and others still, had never used it. The form of the medicine used in all these cases was *whiskey*, not only because it is more free from various deleterious and medicinal substances than most other forms of liquor, but, also, because it is that form which has been especially recommended in such cases. The doses varied from half an ounce to two ounces three times a day. In most of the cases it was the only medicine given during the time the cases were under treatment; in a few, some palliatives of particular symptoms were exhibited which could not have interfered with the result of the experiment. (I commenced with a much more numerous list of cases than I give here; those who have ever attempted such an experiment on such persons will easily imagine the reasons which reduced the number of my cases.)

These cases were under observation three months (except when otherwise stated), during the spring—a period when patients affected with this disease generally exhibit a temporary amelioration of symptoms—so that judging of the effects of a remedy exhibited during this season we should, probably, form opinions of its action, *at least as favourable* as truth would warrant.

As being one of the best means of forming a judgment of the effects of alcohol in this malady, and, at the same time one capable of arrangement into a statistical form without any opportunity for preconceived opinions of the observer to intrude themselves, I have chosen the weight of the patients taken at different periods. First, at the commencement of treatment, afterwards, in general, at periods of a month. These weights were taken with care upon the same scales, the patients having on the same clothing at each successive period. The physical signs are given at the commencement and termination of treatment from personal observation. The cough, diarrhœa, hectic, and any subjective symptoms, from the reports of the patients themselves. During the whole time of treatment they were placed under as favourable hygienic conditions as possible, and a diet recommended, consisting of as much fat meat as could be digested. No cod-liver oil was exhibited in any case, nor had any been taken for some time previously.

With these preliminaries, I give the cases as they stand upon my notebook; the observations being made in every instance upon the spot.

CASE No. 1.—A gunmaker, aged 40. Has always been a regular, but not excessive drinker. Two months ago he was attacked with severe hæmoptysis after a debauch, lasting several days. He was considerably reduced by this, and left off the use of alcohol till he took it by my recommendation. His physical signs were those of a moderate deposit of tubercle

in the upper half of the left lung, with commencing softening. (As this patient remained under treatment only a short time I shall give no further particulars.) He commenced taking whiskey, two ounces, three times a day, and the second day was attacked again by hæmoptysis, as after the debauch previously. The whiskey was stopped till this had ceased, after which it was renewed in a much smaller quantity. But symptoms of recurring hæmoptysis and disordered digestion induced the patient to refuse to continue its use further. He was accordingly put upon other treatment.

The recurrence of hæmoptysis in this case appears as though it was caused by the whiskey. It might be only a coincidence, but it could have no influence in restraining it, judging from this case.

CASE No. 2.—A hatter, aged 40 years. Had cough a year, and was emaciated somewhat. The physical signs are those of extensive deposits of tubercle in the tops of both lungs, with a small vomica in the left. He had hæmoptysis three months ago, and hectic and severe cough at the present time. He had always been an intemperate man, and still continues in the same habits. He took two ounces of whiskey three times a day, a quantity considerably less than he had been accustomed to.

Weight at commencement of treatment	.	.	.	.	146 lbs.
" " the end of 1 month	.	.	.	.	146 "
" " " 2 months	.	.	.	.	152 "

He had a poor appetite and digestion throughout the whole period of treatment. Hectic and night-sweats also continued, unaffected by the remedy. After using the whiskey a fortnight he had an attack of hæmoptysis. Cough rather improved and expectoration less. The physical signs were much the same, after two months' treatment, as before.

CASE No. 3.—A musician, aged 22 years. Hæmoptysis five months ago, with cough ever since. Had always been temperate. Physical signs of softening tubercles in top of left lung, with a commencing deposit in the right. Has night-sweats and severe cough. Digestion good. Prescribed whiskey, one ounce three times a day.

Weight at commencement of treatment	.	.	.	.	116 lbs.
" " the end of 1 month	.	.	.	.	113 "
" " " 2 months	.	.	.	.	114 "
" " " 3 "	.	.	.	.	112 "

Night-sweats continued without change during the whole treatment. Cough improved, according to the patient's account, at each visit. Appetite and digestion continued good. The physical signs at the end of three months showed nearly as extensive a deposit of tubercle in the right lung as in the left. They were also softening in the former.

CASE No. 4.—A labourer, aged 59 years. Always intemperate, and had continued in the habit up to the present time. Taken with cough a year ago. Never had hæmoptysis. Tubercles in the tops of both lungs, principally in the left, in which they were softening. Cough severe; digestion bad; bowels quite loose for some months. Prescribed whiskey, one ounce three times a day; but the patient must have considerably exceeded this amount, as I found him drunk several times on making my visits.

Weight at commencement	.	.	.	.	130 lbs.
" " 1 month	.	.	.	.	130 "
" " 2 months	.	.	.	.	128 "
" " 3 "	.	.	.	.	128 "

During the course of treatment the physical signs and sputa showed that a cavity had formed in the top of the left lung, though he continually reported his cough better. The bowels have been regular for the last month. During the same time he has been troubled with hectic fever and night-sweats. Appetite and digestion continued bad throughout the period of treatment. At the commencement he went out daily, but has spent the last month in bed nearly all the time.

CASE No. 5.—A shoemaker, aged 29 years. Had always been a very intemperate man, and, although in the last stages of phthisis, continued the use of whiskey to a much larger extent than I prescribed it. Had cough a year, and several attacks of hæmoptysis. Was much emaciated, and so feeble as not to leave the house; consequently he was not weighed. Extensive deposits of tubercle in both lungs with cavities. Whiskey was prescribed, one ounce three times a day, but he really far exceeded this allowance, as he had done for a long time previously. This patient gradually sank and died two months after coming into my hands. No post-mortem examination was allowed. One feature in this case deserves especial mention as bearing upon the effects of alcohol. Just before I saw him he began to have a tubercular enlargement of one of the glands of the neck, and before he died tubercular disease of the left ankle showed itself. This was rapidly progressing at the time of his death. No case that I have seen shows so strongly the powerlessness of alcohol in preventing or arresting a deposit of tubercle as this. The patient was a drunkard in the common acceptation of the term, and continued in the excessive use of alcohol to his death; yet at three distinct periods tubercle was deposited in different parts. In the ankle, when it occurred under my observation, it came on with great rapidity.

CASE No. 6.—A carpenter, aged 47 years. Had suffered from a fracture of his ribs in youth, which considerably diminished the dimensions and mobility of his chest. He had been intemperate up to the time he came into my hands, with the exception of the last few weeks. Has had cough for two years. No hæmoptysis; has emaciated considerably. Tubercles in the tops of both lungs, principally the right. There are no physical signs of a vomica, although he is expectorating pus very copiously streaked with blood. Appetite and digestion bad. Cough very severe, with hectic. Prescribed half an ounce of whiskey three times a day, which amount he did not exceed.

Weight at commencement of treatment	.	.	.	.	134 lbs.
" " 1 month	.	.	.	.	130 "
" " 2 months	.	.	.	.	128 "
" " 3	.	.	.	.	126 "

The physical signs of a cavity in the right lung gradually became distinct, and are very evident at the present time. Notwithstanding this, however, his other symptoms improved so that, from keeping his bed, he went to work. Cough much less. Appetite improved, and bowels regular, but still has regular hectic. This delusive amendment, I believe, is not uncommon after the immediate irritation caused by the rupture of a tubercular abscess has passed away. I consider the amendment to have been delusive in this case because it was not accompanied by a corresponding improvement of the physical condition.

CASE No. 7.—A carpenter, aged 58 years. Has always been intemperate up to the period of treatment. Cough commenced two years ago; no hæmoptysis. Softening tubercles in the tops of both lungs, about equally

distributed. No diarrhœa nor hectic. Digestion bad, and somewhat emaciated.

Weight at commencement of treatment	. . . . .	107 lbs.
" " 1 month . . . . .	. . . . .	105 "
" " 2 months . . . . .	. . . . .	100 "
" " 3 " . . . . .	. . . . .	100 "

This case was quite a chronic one, and, except in a gradual diminution of weight, there was no appreciable change of condition. The cough remained hard, the digestion bad, and the bowels regular.

These seven cases were males; the remainder were females. The preponderance in number of males was merely accidental, as they chanced to present themselves in the way they are reported here.

CASE No. 8.—Housekeeper, aged 36 years. Had always been perfectly temperate. Was attacked with hæmoptysis two years ago, and has had cough over since. Tubercles in the tops of both lungs, most in the right. Cough not very severe; appetite and digestion bad; bowels costive. Prescribed one ounce of whiskey three times a day.

Weight at commencement of treatment	. . . . .	131 lbs.
" " 1 month . . . . .	. . . . .	130 "
" " 2 months . . . . .	. . . . .	129 "
" " 3 " . . . . .	. . . . .	128 "

This patient had not emaciated any before commencing the treatment, and she still continues in good condition as to flesh. At the termination of the treatment the physical signs showed a decided advance of the tubercle; the cough was also more severe. Otherwise the symptoms remained the same. (This patient attributed the change for the worse in her condition, which she herself recognized, to the depressing effect of family troubles.)

CASE No. 9.—A housekeeper, aged 39 years. Has always been a moderate drinker. Has had cough for two months; no hæmoptysis. Appetite and digestion bad. Bowels regular; no hectic. A moderate deposit of tubercle in the top of the right lung.

Weight at commencement of treatment	. . . . .	122 lbs.
" " 1 month . . . . .	. . . . .	122 "
" " 2 months . . . . .	. . . . .	122 "
" " 3 " . . . . .	. . . . .	122 "

At the termination of the experiment her physical signs were nearly the same; the cough improved; the bowels regular; and the digestion improved. The patient attributed the amendment in her condition to the ounce and a half of whiskey she took each day. In this opinion I cannot concur, as it was very nearly the same amount she had been accustomed to take daily for years.

These cases are not so numerous as I could have wished, and a continuation of the treatment for a longer time would have given them greater weight in forming an opinion as to the effects of the treatment. Still it appears to me that important indications can be drawn from them. At the same time we should bear in mind the liability to error from the peculiarly changeable character of the disease, and the proclivity of patients to state their symptoms as improving after commencing a new course of treatment. The following table will show the weights of the patients at the different times they were taken, the first column being that at the commencement of the treatment, the subsequent ones at interval of a month:—

Case No. 1							
" 2	.	.	.	.	146	146	152
" 3	.	.	.	.	116	113	114
" 4	.	.	.	.	130	130	128
" 5							
" 6	.	.	.	.	134	130	128
" 7	.	.	.	.	107	105	100
" 8	.	.	.	.	131	130	129
" 9	.	.	.	.	122	122	122

An examination of this table shows that in five of the seven cases where the weight was noted there was a nearly regular and progressive diminution; in one it was stationary, and in one there was an increase.

So far as this table goes, and I regard its indications as among the most important, it seems to me to be decidedly adverse to the opinion that the effects of alcohol are good in this disease. The following table exhibits the indications of the physical signs as nearly as it can be done in such a mode:—

No. 1		No. 4	Worse.	No. 7	No change.
" 2	No change.	" 5	"	" 8	Worse.
" 3	Worse.	" 6	"	" 9	No change.

In four of the seven cases which could properly come into this comparison there was a change for the worse. In not a single one had they improved. In Nos. 4 and 6, cavities formed during the course of treatment. Hæmoptysis occurred in two of the cases during the treatment.

The cough, according to the reports of the patients themselves, upon whom it is necessary to depend, was better in five cases; not changed in one, and worse in one. This was the only symptom which appeared to improve in a majority of the cases; and, as in these, it was not accompanied by a corresponding improvement in other respects, it appears to me probable that the judgment of the patients was at fault.

The remainder of the symptoms, generally, did not change during the treatment, those that were good remaining so, and *vice versa*.

On the whole, it appears to me that the indications to be drawn from these cases are decidedly adverse to the use of alcohol as a therapeutic agent.

It will thus be seen that the conclusions we should have drawn from the already proved effects of alcohol upon the healthy, in regard to its action upon those who are phthisical, are borne out by facts.

I am well aware that the statistics presented in this essay are by no means sufficiently extensive to set the question at rest. But after a careful consideration of the facts presented by others, and also from the results of the observations here presented, I think the following general conclusions may be regarded as probably true:—

1. The opinion so largely prevailing as to the effects of the use of alcoholic liquors, viz., that they have a marked influence in preventing the deposition of tubercle, is destitute of any solid foundation.

2. On the contrary their use appears rather to predispose to tubercular deposition.

3. Where tubercle already exists alcohol has no obvious effect in modifying the usual course run by that substance.

4. Neither does it mitigate, in any considerable degree, the morbid effects of tubercle upon the system, in any stage of the disease.